

REMARKS

The Office Action dated September 8, 2004 has been received and carefully noted. The above amendments to the claims and the following remarks, are submitted as a full and complete response thereto.

Applicants respectfully request an acknowledgment of the claim for foreign priority that was filed on November 27, 2000 along with certified copies of the foreign applications.

Claims 1-65 are cancelled without prejudice. New claims 66-106 are added. Applicants respectfully submit that no new matter has been added and the newly submitted claims more particularly point out and distinctly claim the subject matter of the present invention. Accordingly, claims 66-106 are respectfully submitted for consideration.

The Office Action rejects claims 1-65 under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 5,809,019 to Ichihara et al. (Ichihara), in view of U.S. Patent No. 6,175,747 to Tanishima et al. (Tanishima). It is further submitted that in light of the cancellation of claims 1-65 that this rejection is moot. It is respectfully submitted that the cited references fail to disclose or suggest all of the features recited in claims 66-106.

Independent claim 66, from which claims 67-96 depend, recites a method for implementing transmission antenna diversity in a mobile communication system, which includes at least one receiving unit and at least one transmitting unit, wherein there are at

least two transmission antenna routes and in which the mobile communication system, the receiving unit, and the transmitting unit are adapted for data transmission connection with one another over a radio path. The method comprises transmitting a signal through at least one of the at least two transmission antenna routes of the transmitting unit, the signal containing signal information which identifies the transmission antenna routes in the transmitting unit. The method further comprises choosing in the receiving unit, an optimum transmission antenna route based at least on signals received in the transmitting unit that contain information identifying the transmission antenna route. The method further comprises making the chosen transmission antenna route known to the transmitting unit with an antenna route choice notification. The method further comprises transmitting user data from the transmitting unit through a transmission antenna route selected for use in the transmitting unit, wherein the selection is based on the antenna route choice notification. Further, the method comprises verifying, in the receiving unit, a transmission antenna route selected for use wherein the verification is based on information in the user data and identifying the transmission antenna route selected for use.

Independent claim 103 recites an arrangement for implementing transmission antenna diversity in a mobile communication system, wherein the system includes a receiving unit and a transmitting unit, the transmitting unit includes at least two transmission antenna routes, and in which system the receiving unit and the transmitting unit are adapted for a data transmission connection with one another over a radio path.

The transmitting unit if the arrangement comprises a transmitting means for transmission of a signal, said transmitting means being arranged to produce in the signals to be transmitted information identifying the transmission antenna route. The transmitting unit of the arrangement further comprises means for receiving an antenna route choice notification. The transmitting unit of the arrangement further comprises means for selecting for transmission of user data, a transmission antenna route based on a received antenna route choice notification. The transmitting unit of the arrangement further comprises means for using a selected antenna route for the transmission of user data. The arrangement further comprises means for forming, in the user data signal to be transmitted, information identifying the transmission antenna route selected for use. The receiving unit of the arrangement comprises a choosing means for choosing an optimum transmission route based on received signals having information identifying the transmission antenna route. The receiving unit of the arrangement further comprises means for notifying the transmission unit of a chosen optimum transmission antenna route. Further, the receiving unit of the arrangement comprises verification means for verifying the transmission antenna route selected for use, based on the information identifying the transmission antenna route selected for use, contained in the user data signal formed in the transmission unit.

Independent claim 104 recites a transmitting unit for implementing transmission antenna diversity. The transmission unit comprises a transmitting means for transmission of a signal, the transmitting means being configured to produce in the signals to be

transmitted, information identifying a transmission antenna route. The transmission unit further comprises a means for receiving an antenna route choice notification. The transmission unit further comprises a means for selecting a transmission antenna route based on the received antenna route choice notification for transmission of user data. The transmission unit further comprises a means for using a selected antenna route for the transmission of user data. Further, the transmission unit further comprises a means for forming in the user data signal to be transmitted, information identifying the transmission antenna route selected for use.

Independent claim 105 recites a receiving unit for implementing transmission antenna diversity. The receiving unit comprises choosing means for choosing an optimum transmission antenna route based on received signals having information identifying the transmission antenna route. The receiving unit further comprises the means for notifying a transmission unit of the chosen optimum transmission antenna route. Further, the receiving unit comprises verification means for verifying the transmission antenna route selected for use based on the information identifying the transmission antenna route selected for use wherein said information is contained in the user data signal formed in the transmission unit.

Independent claim 106 recites a mobile communication system comprising at least one transmitting unit and at least one receiving unit. At least one of said at least one transmitting unit comprises transmitting means for transmission of a signal said transmitting means being arranged to produce in the signals to be transmitted,

information identifying the transmission of antenna route. The at least one transmitting unit further comprises a means for receiving an antenna route choice notification. The at least one transmitting unit also comprises means for selecting for transmission of user data, a transmission antenna route based on the received antenna route choice notification. Further, the at least one transmitting unit comprises a means for using a selected antenna route for the transmission of user data. The at least one transmitting unit further comprises the means for forming, in the user data signal to be transmitted, information identifying the transmission antenna route selected for use. At least one of the at least one receiving unit of the mobile communication system comprises a choosing means for choosing an optimum transmission route based on received signals having information identifying the transmission antenna route. The at least one receiving unit further comprises means for notifying at least one transmitting unit of the chosen optimum transmission antenna route. Further, the at least one receiving unit comprises a verification means for verifying the transmission antenna route selected for use, based on the information identifying the transmission antenna route selected for use contained in the user data signal formed in a transmission unit.

As discussed in the present specification, embodiments of the present invention include a choice of transmission diversity antennas for each receiving unit and ensures the quality of data transmission through reliable transmission antenna diversity. This is accomplished by the receiving unit choosing an optimum transmission antenna route for the transmitting unit, such as a transmission antenna branch or a transmission antenna

beam, based on information produced for broadcasting, that is transmitted by the transmitting unit through each transmission antenna route or for the traffic channel transmission. The choice is announced to the transmitting unit, which will connect the transmission to one transmission antenna route based on this received notification, independently of other subscriber connections. It is respectfully submitted that the cited prior art references, when viewed singly or when combined, fails to disclose or suggest all of the elements recited in any of the presently pending claims. Therefore, the prior art fails to provide the critical and unobvious advantages discussed above.

Ichihira discloses a transmission diversity system for selecting one of a plurality of radio transmission systems in a base station to perform diversity transmission of data to a mobile station. Transmission data is transmitted from one radio transmission system based on optimum radio transmission system information transmitted as a radio wave from the mobile station. The mobile station determines an identification signal representing an optimal reception state, and transmits the determined optimal radio transmission system information to the base station. The base station transmits transmission data from one of its radio systems based on the optimal radio transmission system information transmitted by the mobile station. In column 6, lines 39-47, Ichihira discloses that the optimal branch information having a good reception state is identified in the mobile station 2, and this optimal branch information is transmitted to the base station. The data is transmitted from the branch selected by the base station on the basis of the optimal branch information.

As stated above, claims 66, 103, 104, 105 and 106 recite that the transmitting unit forms information identifying the transmission antenna route selected for use. The verification is based on information in the user data signal, transmitted by the transmitting unit. In addition, the receiving unit verifies the transmission antenna route selected for use. Thus, Ichihira fails to disclose or suggest the feature of verifying, in the receiving unit, the transmission antenna route selected for use based on information in the user data signal that is in turn formed in the transmitting unit and identifying the transmission antenna route selected for use, as recited in claim 66, 103, 104, 105, and 106.

Tanishima discloses a base transceiver station and subscriber unit in a wireless local loop system using a personal handy-phone system. Tanishima discloses a base transceiver station comprising a plurality of cell stations, each accommodating a plurality of subscriber units; a hybrid section integrally handling signals transmitted and received by the plurality of cell stations via single antenna and a multiplex and de-multiplexing unit integrally handling the signals transferred between a plurality of cell stations and an existing network. Tanishima, similar to Ichihira, discloses the selection of the transmission antenna based on signal levels received in the antenna. As stated in column 8, lines 59-65, “whether the antenna ANT 1 side ANT 2 side is selected is determined by the switch routes in these base diversity switches. . . . Thus, each switch route is determined based on the selection information, which antenna between the antennas ANT 1 and ANT 2 has a high reception level . . .” Thus, Tanishima discloses that the antenna

route is selected in the transmitting unit and not the receiving unit, as recited in claims 66, 103, 104, 105 and 106.

As discussed above, applicants respectfully submit that the cited references fail to disclose or suggest all of the elements recited in the independent, including the element that the transmitting unit forms information identifying the transmission antenna route selected for use to the user data signal to be transmitted and that the receiving unit verifies the transmission antenna route selected for use. It is further respectfully submitted that no combination of any of the cited references discloses or suggests all of the subject matter of the presently pending claims.

It is further submitted that each of claims 66-106 recites subject matter which is neither disclosed nor suggested in the cited prior art. It is therefore respectfully requested that all of claims 66-106 be allowed, and this application pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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